

STATEMENT OF THE CLAIMS

1. (currently amended) A method for applying a clip to tissue, comprising:

a) inserting ~~a flexible~~ into a human body an instrument sufficiently flexible to be bent through a 180° path ~~into a human body~~, the instrument loaded with a plurality of surgical clips;

b) advancing a first clip over a first section of layers of the tissue in a direction parallel to the layers;

c) deforming the first clip so that a portion of the first clip pierces the first section of the tissue;

d) without removing the instrument from the human body, advancing a second clip over a second section of layers of the tissue in a direction parallel to the layers; and

e) deforming the second clip so that a portion of the second clip pierces the second section of the tissue.

2. (original) A method according to claim 1, further comprising:

f) clamping the first section of the tissue before advancing the first clip; and

g) clamping the second section of the tissue before advancing the second clip.

3. (original) A method according to claim 1, wherein:

each of the first and second clips includes first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending into a deformable retainer,

wherein said deforming the first clip includes bending the retainer of the first clip, and said deforming the second clip includes bending the retainer of the second clip.

4. (original) A method according to claim 3, wherein:

said bending the retainer of the first clip includes bending the retainer of the first clip about the second arm of the first clip, and said bending the retainer of the second clip includes bending the retainer of the second clip about the second arm of the second clip.

5. (original) A method according to claim 4, wherein:

the retainer of the first clip includes a hook, and the second arm of the first clip includes a catch for the hook, wherein when the retainer is bent about the second arm, the hook engages the catch.

6. (original) A method according to claim 1, wherein:

said inserting a flexible instrument into a human body includes inserting the instrument through an endoscope.

7. (original) A method according to claim 1, wherein:

said advancing a first clip includes pushing the first clip with a force in excess of 500 grams.

8. (original) A method according to claim 1, wherein:

said advancing a first clip includes pushing the first clip with a force in excess of 1000 grams.

9. (original) A method according to claim 1, wherein:

said advancing a first clip includes pushing the first clip with a force in excess of 1500 grams.

10. (original) A method according to claim 1, wherein:

said advancing a first clip includes pushing the first clip with a force in excess of 2000 grams.

11. (original) A method of applying a surgical clip to tissue, comprising:

a) providing a surgical instrument including,

i) a flexible outer tubular member having proximal and distal ends,

ii) a flexible clip-advancing element extending through said tubular member and having proximal and distal ends,

iii) a jaw mount coupled to said distal end of said tubular member,

iv) a pair of jaws mounted on said jaw mount, at least one of said pair of jaws being rotatable on said jaw mount relative to the other of said pair of jaws, each of said pair of jaws having a tissue clamping surface, and at least one of said pair of jaws having a clip guide,

v) at least one control element having proximal and distal ends and extending through said tubular member, said distal end of each said at least one control element being coupled to at least one of said pair of jaws,

vi) a handle assembly coupled to said proximal ends of said tubular member, said clip-advancing element, and said at least one control element and adapted

(A) to move said clip-advancing element relative to said tubular member, and

(B) to move said at least one control element relative to said tubular member to effect clamping of said jaws about the tissue and release therefrom,

vii) a clip chamber formed by at least one of said tubular member and said jaw mount adapted to store at least one surgical clip,

viii) a plurality of surgical clips in said clip chamber,

ix) a clip pusher at said distal end of said clip-advancing element and adapted to advance the clips in said clip chamber;

b) inserting said instrument into the human body;

c) locating said jaws about a first target tissue;

d) operating said handle to cause said tissue clamping surfaces of said jaws to clamp about said first target tissue; and

e) operating said handle to cause said clip pusher to be forced distally relative to said distal end of said tubular member with sufficient force to advance a clip from said clip chamber through said at least one clip guide and over said clamped first target tissue.

12. (original) A method according to claim 11, wherein:

one of said jaws includes an anvil, and said operating said handle to advance said clip causes a portion of said clip to deform against said anvil.

13. (original) A method according to claim 12, wherein:

said deformation of said portion of said clip causes said portion to bend or angle toward the other of said jaws.

14. (original) A method according to claim 13, wherein:

said clip includes first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending into a deformable retainer,

wherein said deforming the clip includes bending the retainer of the clip.

15. (original) A method according to claim 14, wherein:

said bending the retainer of the clip includes bending the retainer about the second arm.

16. (original) A method according to claim 15, wherein:

the retainer includes a hook, and the second arm includes a catch for the hook, wherein when the retainer is bent about the second arm, the hook engages the catch.

17. (original) A method according to claim 11, wherein:

said inserting a flexible instrument into a human body includes inserting the instrument through an endoscope.

18. (original) A method according to claim 11, wherein:

said operating said handle to advance a clip includes pushing the first clip with a force in excess of 500 grams.

19. (original) A method according to claim 11, wherein:

said operating said handle to advance a clip includes pushing the first clip with a force in excess of 1000 grams.

20. (original) A method according to claim 11, wherein:

said operating said handle to advance a clip includes pushing the first clip with a force in excess of 1500 grams.

21. (original) A method according to claim 11, wherein:

said operating said handle to advance a clip includes pushing the first clip with a force in excess of 2000 grams.

22. (currently amended) A method of providing an endoscopic pushing force, comprising:

a) providing a flexible ~~endoscopic~~-instrument sized to be extended through the lumen of an endoscope and having a flexible outer tubular member and a flexible inner member extending within and movable relative to said outer tubular member, each of said outer tubular member and said inner member having a distal end; and

b) moving said inner member distally relative to said outer tubular member such that a relatively distal force of at least 500 grams is provided at said distal end of said inner member.

23. (original) A method according to claim 22, wherein:

said distal force is at least 1000 grams.

24. (original) A method according to claim 22, wherein:

said distal force is at least 1500 grams.

25. (original) A method according to claim 22, wherein:

said distal force is at least 2000 grams.

26. (original) A method according to claim 22, further comprising:

c) providing a compressive force to said tubular member when moving said inner member distally relative to said outer tubular member.

27. (original) A method of operating a flexible surgical instrument having an flexible outer tubular member with a tensile limitation, and a flexible inner member extending within said outer tubular member, comprising:

- a) providing a compressive force to the outer tubular member to increase a tensile limitation of the outer tubular member; and
- b) providing a force which is compressive to said inner member and tensile to said outer tubular member while maintaining said compressive force on said outer tubular member such that a pushing force in excess of 500 grams is provided at said distal end of said inner member relative to said outer tubular member.

28. (original) A method of effecting surgery, comprising:

- a) providing a flexible endoscopic instrument having
 - i) a flexible coil outer tubular member,
 - ii) a flexible inner member extending within said outer tubular member, each of said outer tubular member and said inner member having respective proximal and distal ends, and
 - iii) a proximal handle coupled to said proximal ends of said outer tubular member and said inner member, said handle adapted to move said inner member relative to said outer tubular member; and
- b) operating said handle to create a tensile force of at least 500 grams at said distal end of said outer tubular member.

29. (currently amended) A method of applying a surgical clip to tissue, comprising:

a) providing a surgical instrument including,

i) a flexible outer tubular member having proximal and distal ends,

ii) a flexible clip-advancing element extending through said tubular member and having proximal and distal ends,

iii) a jaw mount coupled to said distal end of said tubular member,

iv) a pair of jaws mounted on said jaw mount, at least one of said pair of jaws being rotatable on said jaw mount relative to the other of said pair of jaws, each of said pair of jaws having a tissue clamping surface, and at least one of said pair of jaws having a clip guide,

v) at least one control element having proximal and distal ends and extending through said tubular member, said distal end of each said at least one control element being coupled to at least one of said pair of jaws,

vi) a handle assembly coupled to said proximal ends of said tubular member, said clip-advancing element, and said at least one control element and adapted

(A) to move said clip-advancing element relative to said tubular member, and

(B) to move said at least one control element relative to said tubular member to effect clamping of said jaws about the tissue and release therefrom,

vii) a clip chamber,

viii) a plurality of surgical clips in said clip chamber,

ix) a clip pusher at said distal end of said clip-advancing element and adapted to advance the clips in said clip chamber,

wherein a distal end of said instrument is sized to be inserted through a lumen of an endoscope;

- b) inserting said instrument through a lumen of an endoscope and into the human body;
- c) locating said jaws about a first target tissue;
- d) operating said handle to cause said tissue clamping surfaces of said jaws to clamp about said first target tissue; and
- e) operating said handle to cause said clip pusher to be forced distally relative to said distal end of said tubular member with sufficient force to advance a clip from said clip chamber through said at least one clip guide and over said clamped first target tissue.

30. (currently amended) A method for applying a clip to tissue, comprising:

- a) inserting a flexible instrument into a human body, the instrument loaded with a plurality of surgical clips;
- b) advancing a first clip over a first section of the tissue, said first clip including first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending to become a plastically deformable retainer;
- c) plastically deforming the first clip retainer of the first clip so that ~~a portion of the first clip~~ the retainer pierces the first section of the tissue;
- d) without removing the instrument from the human body, advancing a second clip over a second section of the tissue, the second clip including first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending to become a plastically deformable retainer; and

e) plastically deforming the retainer of the second clip so that ~~a portion of the second~~
clip the retainer pierces the second section of the tissue.

31. (canceled)

32. (new) A method for applying a clip to tissue, comprising:

- a) inserting a flexible instrument into a human body, the instrument loaded with a plurality of surgical clips;
- b) advancing a first clip over a first section of the tissue;
- c) deforming the first clip so that a portion of the first clip pierces the first section of the tissue;
- d) without removing the instrument from the human body, advancing a second clip over a second section of the tissue; and
- e) deforming the second clip so that a portion of the second clip pierces the second section of the tissue,

wherein each of the first and second clips includes first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending into a deformable retainer,

wherein said deforming the first clip includes bending the retainer of the first clip, and said deforming the second clip includes bending the retainer of the second clip.

33. (new) A method according to claim 32, wherein:

said bending the retainer of the first clip includes bending the retainer of the first clip about the second arm of the first clip, and said bending the retainer of the second clip includes bending the retainer of the second clip about the second arm of the second clip.

34. (new) A method according to claim 33, wherein:

the retainer of the first clip includes a hook, and the second arm of the first clip includes a catch for the hook, wherein when the retainer is bent about the second arm, the hook engages the catch.

35. (new) A method of applying a surgical clip to tissue, comprising:

a) providing a surgical instrument including,

i) a flexible outer tubular member having proximal and distal ends,

ii) a flexible clip-advancing element extending through said tubular member and having proximal and distal ends,

iii) a jaw mount coupled to said distal end of said tubular member,

iv) a pair of jaws mounted on said jaw mount, at least one of said pair of jaws being rotatable on said jaw mount relative to the other of said pair of jaws, each of said pair of jaws having a tissue clamping surface, and at least one of said pair of jaws having a clip guide and one of said jaws having an anvil,

v) at least one control element having proximal and distal ends and extending through said tubular member, said distal end of each said at least one control element being coupled to at least one of said pair of jaws,

vi) a handle assembly coupled to said proximal ends of said tubular member, said clip-advancing element, and said at least one control element and adapted

(A) to move said clip-advancing element relative to said tubular member, and

(B) to move said at least one control element relative to said tubular member to effect clamping of said jaws about the tissue and release therefrom,

vii) a clip chamber formed by at least one of said tubular member and said jaw mount adapted to store at least one surgical clip,

viii) a plurality of surgical clips in said clip chamber, said clips having first and second arms and a bridge portion therebetween to together define a generally U-shaped construct, the first arm extending beyond said second arm into a deformable retainer,

ix) a clip pusher at said distal end of said clip-advancing element and adapted to advance the clips in said clip chamber;

b) inserting said instrument into the human body;

c) locating said jaws about a first target tissue;

d) operating said handle to cause said tissue clamping surfaces of said jaws to clamp about said first target tissue, and advance said clip to deform said retainer against said anvil of one of said jaws to cause said retainer to bend or angle toward the other of said jaws; and

e) operating said handle to cause said clip pusher to be forced distally relative to said distal end of said tubular member with sufficient force to advance a clip from said clip chamber through said at least one clip guide and over said clamped first target tissue.

36. (new) A method according to claim 35, wherein:

said bending the retainer of the clip includes bending the retainer about the second arm.

37. (new) A method according to claim 36, wherein:

the retainer includes a hook, and the second arm includes a catch for the hook, wherein when the retainer is bent about the second arm, the hook engages the catch.

38. (new) A method according to claim 1, wherein:

said inserting an instrument into the human body includes inserting an instrument sufficiently flexible to be bent through a 360° path.